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XXVII.—*Further Notes on* Phylloscopus borealis *in Norway.*

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In the 'Proceedings' of the Zoological Society of London for 1877, p. 43, I published some observations on *Phylloscopus borealis* and its occurrence in Norway. I had found this species during the summer of 1876 established in several places in Finmark, as in the inner valleys of Porsanger and in the valley of the Pasvig river in South Varanger. Since then I have visited Finmark on several occasions during the summer, and have frequently had opportunities of observing *P. borealis* in the previously known spots, as well as in fresh localities. I therefore wish to make some further observations concerning this interesting species as a supplement to my former paper.

Phylloscopus borealis is to be found breeding in Finmark (Norwegian Lapland) in many of the luxuriant birch-woods both in West and East Finmark. To the west of the North Cape I have not met with it up to the present, nor especially in the rich valleys in Alten, which, however, I have had but little opportunity of visiting; but I believe it not unlikely that it will be found inhabiting this district also, and thus prove that it has extended its range to the western seas. Its northern boundary in our land may be said to be 70° 20′, while, in Siberia, Mr. Seebohm did not meet with it north of 69°.

It was especially in the months of June and July 1885 that I had good opportunities of observing this species during its summer residence in our latitudes. That year I visited the wide Tana valley *; and here I found *P. borealis* everywhere about the lower course of the river (Matsjok, Seida, Oldernæs, Polmak), where the birch-woods were tolerably luxuriant, and where the ground was not too dry, but well overgrown with plants and grasses. In South Varanger, where I have met it on several previous occasions (in Langfjord and on the Pasvig river), I found it last summer again in the old localities at Elvenæs and Salmi-Javre, and met with it also in Jarfjord.

At several of these places, especially at Polmak, in Tana, and at Salmi-Javre on the Pasvig, these birds were comparatively numerous, and during a few hours' walk I have met with a dozen singing males.

As the luxuriant birch-woods are only to be found in the larger valleys, these are the chief places of resort of this species; but they do not live on the plateaus or open places, even when these are partially wooded, as the woods there are generally more or less thin and the trees stunted. They frequent both the birch trees and willow-thickets, and often sit singing from the top of the tall fir trees which are to be found singly or in small numbers in the birch-woods. In its habits *P. borealis* resembles the other *Phylloscopi*, but is wilder, flies with greater strength, and appears reluctant to show itself so openly between the leaves as, for instance, *P. trochilus*. They are often seen fluttering about the end of the branches like the last-mentioned species in order to look for insects.

Concerning the breeding of *P. borealis* but little, so far as I know, has yet been published.

Near Lake Baikal, in 1866–71, Dybowski found it breeding in woods of *Pinus cembra* and *Pinus pichta*; and he describes the nest in the following terms (Journ. f. Ornith. 1872, p. 359):—"Er macht es in der Form einer Hütte, indem er dem vorhandenen Grase oder Moose die Gestalt eines Gewölbes giebt. Das letzte hebt er von der Erde etwas in die Höhe und glättet es aus, und erst unter diesem natürlichen Gewölbe macht er ein Lager von lauter trockenen Zirbelbaumnadeln (*P. cembra*). Auf diese Weise hat er eigentlich kein Nest, es ist nur ein natürliches Gewölbe und ein Lager." It will be seen that none of the nests described below exhibited a trace of the peculiarity of construction described by Dybowski.

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* Lately described by Mr. Alfred Chapman in 'The Ibis' for 1885, p. 158, in his "Birds'-nesting Ramble in Lapland."

On July 6, 1877, at Egaska, on the Yenesei, a little north of the Arctic Circle (67°), Mr. Seebohm found a nest with five fresh eggs (which were rather larger than those of *P. trochilus*) of a white colour, with very pale red spots. The nest was built on the ground in a rather open wood, on the side of a tussock, between grass and other plants, and was semidomed and composed only of dry straws, without feathers or moss ('Ibis,' 1879, p. 9).

As my sojourn in Finmark in 1885 was just in the districts where this species is found more or less frequently, I did my best to trace out its breeding-habits in our country; and my efforts were at least partially successful.

At Matsjok, the last large tributary of the Tana river before its outlet to the sea, I met with the first specimen on June 22nd, and they were then evidently just arrived, as the season was unusually little advanced. The next day it was heard to sing for the first time. In a female shot on the 26th (at Polmak) the eggs in the ovary were but little developed, scarcely so large as hemp seeds; and when on June 30th I left the valley for some time, the breeding-season had not commenced, although it was evident that the birds had paired and had probably commenced to build.

When, on July 11th, in company with my friend Mr. Landmark, a zealous oologist, I arrived at the Pasvig river in South Varanger, *P. borealis* appeared to be just in the middle of its breeding-season; but during the few days we spent in that locality we did not succeed, although we spared no pains, in finding any nests. At least six males were singing continually throughout the whole day close to our station, Börnsund, at Salmi-Javre; but the females hardly ever permitted themselves to be seen, while the enormous swarms of mosquitos rendered any close observations almost impossible. We searched for two days unceasingly amongst the singing males. We found a number of other nests in the immediate neighbourhood, but obtained no evidence that nests of *P. borealis* lay near the spot where the males were singing.

On June 25th I was again at Matsjok; and now, in the course of two days, I found three nests of this species, each containing half-grown young ones. At that time it was easy enough to find the nests, as we were attracted to the birds by their very peculiar call-note. The males had by this time almost ceased to sing, and it was now altogether difficult to discover the birds. A good way of finding them was to place one's self close to a nest of *Fringilla montifringilla*, and cause its owners to utter their loud calls of anxiety. This never failed to bring a number of the small birds of the district to the spot. One single sharp note of *P. borealis* and a glimpse of it between the leaves would be sufficient to show that its quarters were not far off. Then I had to search for the place; and on getting near the nest, the parents exhibited great signs of anxiety, although they were sometimes cautious enough, and I was once obliged to wait patiently for two hours exposed to the attacks of the blood-thirsty mosquitos before the female would fly to her nest amongst the tall forest plants.

The first nest I found (on July 27th) was placed at the foot of a slope thickly covered with birch trees, and was well hidden by *Cornus suecica,* halfgrown *Chamænerion angustifolium, Veronica longifolia,* and *Melica nutans.* It lay under the root of a tree, which partly formed a roof to the nest. The other nest, found the same day at another slope in the wood, had no such protection; but both nests were completely domed, as is usual in those of the other *Phylloscopi.* They were most loosely constructed; the outer base was composed of some dry birch-leaves; the outside consisted of coarse straws and moss, the interior of finer straws, but without a trace of hairs or feathers. The number of young birds in the first was seven, in the other six. Each brood was about nine days old.

The third nest (July 28th) also lay on a high slope covered with birch trees, protected by a thin branch of juniper and surrounded mostly by *Cornus suecica,* while the other tall forest plants here were absent. This nest was thus somewhat exposed. Like the others, it was domed and loosely put together, inside with fine straws, outside of larger, but nevertheless soft, straws, as well as a good deal of two kinds of moss which covered the ground in the immediate neighbourhood, viz. *Hylocomium splendens,* Hedw., and *Dicranum scoparium,* Hedw. The number of young was six, nearly ready to fly *.

In these three nests the first eggs must have been laid about July 11th, 10th, and 9th; the number of eggs were seven, six, and six respectively. The distance between the first and second nest was about three kilometres, between the second and third about one kilometre.

Whilst the females are sitting, the males have each their singing-place, which they hardly ever leave. It was on a little hill within the woods covered with larger birch and a few pine trees which towered above the others. Here the male would sit, in the top of the loftiest trees, and sing almost incessantly the whole day; it stopped only for a few moments, when it generally entirely disappeared, and sometimes it could then be seen to meet the female. Some minutes after it would perch again on the top of its tree, as a rule on the same branch, and recommence its song again.

The singing-place is undoubtedly at some distance from the nest; as previously stated, my friend and myself could never discover a trace of the nest there, although the ground around was most carefully searched. The singing male did not take the least notice of our presence, and never by a movement or change of note did it exhibit the slightest anxiety.

* This brood is now mounted in the University Museum, Christiania.

The indefatigable manner in which the male gives forth its monotonous, but nevertheless strongly sounding, song is almost incredible. The song consists, as I have previously remarked, of a single note, *zi-zi-zi-zi* . . . . . ., repeated unusually quickly, fourteen to sixteen times in succession. After each song follows a short period of rest, which in the height of the singing-time scarcely exceeds half a minute, when it recommences its song again. The song of the different specimens was almost precisely alike, but in some it might sound a little more or less harsh than in others. Seebohm has compared the song to the trill of the Redpole; and this seems to be a suitable description, although it appeared to me to resemble more the first quick notes of the song of *Sylvia curruca*.

In these latitudes, where the day is but little lighter than the night, the song might be heard at any hour and even at midnight. A little after the middle of July most of the males had ceased to sing, although at Matsjok once or twice I heard the song so late as the 28th of that month.

This species never occurs in great numbers; but as each male in a district does not conceal itself from notice, the males are consequently more easily secured than the females, which, as a rule, are somewhat difficult to obtain. After the singing-time is past, the males are also but seldom seen; their characteristic and sharp call-note is then the only thing to direct one's attention to them. This call-note can best be described by a short and whistling "tseers," and may be heard at a long distance. It does not closely resemble the cry of any other northern bird, but is most like the note which *Cinclus aquaticus* utters during its flight. This note is always heard when one approaches its nest or its young.

The food of *P. borealis* consists chiefly of mosquitos, which at their breeding-time swarm in myriads in the birch-woods. On two occasions I have found the larvæ of a *Cidaria* or other Geometrid larva in its stomach, as well as other soft insects.

Amongst the numerous specimens I have shot in Finmark during the summer I can find scarcely any variation in the coloration of the plumage; in some males the green colour may be somewhat more strongly developed than in others shot at the same time.

As previously mentioned, these birds appear to arrive rather late in the spring. Mr. Seebohm, in 1877, met with the first arrivals on June 18th, and a few days afterwards found them in considerable numbers. In 1885, at Matsjok (Tana), they could hardly have arrived before June 22nd, but two or three days afterwards they were numerous. No information can be given concerning their departure. The last specimen shot by me was on July 28th (at the third nest), the day before I left the Tana; it had already commenced to moult, and had a considerable number of new feathers on its head and back.

In conclusion I will give the measurements of sixteen freshly killed specimens shot by me in Finmark in 1878 and 1885.

Males.

	Total length. mm.	Wings. mm.	Tail. mm.
a	140	70	49
b	137	70	51
c	135	73	53
d	135	73	52
e	135	70	49
f	135	69	50
g	133	70	48
h	132	69	43
i	132	67	45
j	131	70	53
k	130	68	49
l	129	67	48
m........	127	70	50
n	127	69	50

Females.

	Total length. mm.	Wings. mm.	Tail. mm.
o	125	67	48
p	124	65	49

According to these measurements (together with those previously reported) the average length of this species will be, for males 132 millim., and for females 124 millim.

Christiania, January 31, 1886.